CORRECTED VERSION

(19) World Intellectual Property **Organization**

International Bureau





(43) International Publication Date 22 September 2005 (22.09.2005)

PCT

(10) International Publication Number WO 2005/088704 A1

- (51) International Patent Classification⁷: H01L 21/8234, 27/04, 27/06, 29/786, G06K 19/07, 19/077, H01Q 1/38, 7/00
- (21) International Application Number:

PCT/JP2005/004589

- (22) International Filing Date: 9 March 2005 (09.03.2005)
- (25) Filing Language:
- (26) Publication Language: English
- (30) Priority Data:

2004-070788

12 March 2004 (12.03.2004)

(71) Applicant (for all designated States except US): SEMI-CONDUCTOR ENERGY LABORATORY CO., LTD. [JP/JP]; 398, Hase, Atsugi-shi, Kanagawa, 2430036 (JP).

- (72) Inventors; and
- (75) Inventors/Applicants (for US only): YAMAZAKI, Shunpei [JP/JP]; c/o SEMICONDUCTOR ENERGY LABORATORY CO., LTD., 398, Hase, Atsugi-shi, Kanagawa, 2430036 (JP). ARAO, Tatsuya [JP/JP]; c/o SEMICONDUCTOR ENERGY LABORATORY CO., LTD., 398, Hase, Atsugi-shi, Kanagawa, 2430036 (JP).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW. GH. GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- (48) Date of publication of this corrected version:

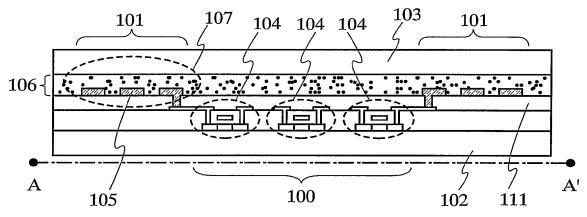
24 November 2005

(15) Information about Correction:

see PCT Gazette No. 47/2005 of 24 November 2005, Section II

[Continued on next page]

(54) Title: SEMICONDUCTOR DEVICE



(57) Abstract: A semiconductor device such as an ID chip of the present invention includes an integrated circuit using a semiconductor element formed by using a thin semiconductor film, and an antenna connected to the integrated circuit. It is preferable that the antenna is formed integrally with the integrated circuit, since the mechanical strength of an ID chip can be enhanced. Note that the antenna used in the present invention also includes a conducting wire that is wound round circularly or spirally and fine particles of a soft magnetic material are arranged between the conducting wires. Specifically, an insulating layer in which fine particles of a soft magnetic material are arranged between the conducting wires. Specifically, an insulating layer in which fine particles of a soft magnetic material are included is arranged between the conducting wires.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.